

ABSTRACT OF THE DISCLOSURE

A semiconductor structure containing a field oxide and a process for fabricating the semiconductor structure. The semiconductor structure includes a semiconductor substrate including an isolation region and an active region; a field oxide formed on the semiconductor substrate in the isolation region; a first pad layer formed on the semiconductor substrate in the active region; a second pad layer formed on the semiconductor substrate not covered by the first pad layer, wherein the second pad layer has a smaller thickness than the first pad layer; a mask layer formed on the first pad layer, wherein the mask layer has a larger width than the first pad layer to form a cavity beneath the mask layer and next to the first pad layer; and a mask filler filled in the cavity. By means of the local pad film thinning technique and by forming a mask filler to grow the field oxide layer, the bird's beak encroachment and the thinning effect of the field oxide layer can both be inhibited.